CLAIMS

1. A printhead having a plurality of printing elements, comprising:

a plurality of switching elements being arranged in correspondence with the respective printing elements and configured to control energization to the respective printing elements;

a reference voltage circuit configured to generate a reference voltage;

a current generation circuit configured to generate a reference current on the basis of the reference voltage generated by said reference voltage circuit; and

a plurality of constant current sources configured to supply, in accordance with the reference current generated by said current generation circuit, constant currents via said switching elements arranged in correspondence with the respective printing elements.

2. The printhead according to claim 1, wherein the respective constant current sources form current mirror circuits with current output circuit portions of said current generation circuit.

3. The printhead according to claim 1, wherein the plurality of printing elements and said plurality of

switching elements are divided into a plurality of groups, and the respective constant current sources are connected to the respective groups.

4. The printhead according to claim 1, wherein the printing element, said switching element, and said constant current source are series-connected.

5. The printhead according to claim 1, wherein said reference voltage circuit generates as the reference voltage a voltage obtained by amplifying a band gap voltage.

6. The printhead according to claim 1, wherein said constant current source is formed using MOS transistors, each of which operates in a saturation region wherein a drain current hardly changes with respect to a drain voltage.

7. The printhead according to claim 1, wherein the printing elements, the switching element and the constant current source are connected in series between a high voltage wiring and a low voltage wiring in an order of the printing elements, the switching element and the constant current source.

8. A printhead comprising:

a plurality of element driving blocks each having a plurality of printing elements, a plurality of switching elements configured to be arranged in correspondence with the respective printing elements and control energization to the respective printing elements, and a plurality of constant current sources configured to supply constant currents via said switching elements arranged in correspondence with the respective printing elements;

a reference voltage circuit configured to generate a reference voltage; and

a current generation circuit configured to generate a plurality of reference currents on the basis of the reference voltage generated by said reference voltage circuit,

wherein each of the constant current sources being arranged in each of said plurality of element driving blocks supplies a constant current corresponding to any one of the plurality of reference currents via said switching element being arranged in correspondence with the each printing element of said element driving block.

9. The printhead according to claim 8, wherein the respective constant current sources form current mirror circuits with current output circuit portions of said current generation circuit.

10. The printhead according to claim 8, wherein said plurality of printing elements and said plurality of switching elements are divided into a plurality of groups, and the respective constant current sources are connected to the respective groups.

11. The printhead according to claim 8, wherein said printing element, said switching element, and said constant current source are series-connected.

12. The printhead according to claim 8, wherein said constant current source is formed using MOS transistors, each of which operates in a saturation region wherein a drain current hardly changes with respect to a drain voltage.

13. The printhead according to claim 8, wherein the printing elements, the switching element and the constant current source are connected in series between a high voltage wiring and a low voltage wiring in an order of the printing elements, the switching element and the constant current source.

14. A printhead substrate having a plurality of printing elements, comprising:

a plurality of switching elements configured to be arranged in correspondence with the respective

printing elements and control energization to the respective printing elements;

a reference voltage circuit configured to generate a reference voltage;

a current generation circuit configured to generate a reference current on the basis of the reference voltage generated by said reference voltage circuit; and

a plurality of constant current sources configured to supply, in accordance with the reference current generated by said current generation circuit, constant currents via said switching elements arranged in correspondence with the respective printing elements.

15. The substrate according to claim 14, wherein the respective constant current sources form current mirror circuits with current output circuit portions of said current generation circuit.

16. The substrate according to claim 14, wherein the plurality of printing elements and said plurality of switching elements are divided into a plurality of groups, and the respective constant current sources are connected to the respective groups.

17. The substrate according to claim 14, wherein said

reference voltage circuit generates as the reference voltage a voltage obtained by amplifying a band gap voltage.

18. The substrate according to claim 14, wherein said constant current source is formed using MOS transistors, each of which operates in a saturation region wherein a drain current hardly changes with respect to a drain voltage.

19. The substrate according to claim 14, wherein the printing elements, the switching element and the constant current source are connected in series between a high voltage wiring and a low voltage wiring in an order of the printing elements, the switching element and the constant current source.

20. A printhead substrate comprising:

a plurality of element driving blocks each having a plurality of printing elements, a plurality of switching elements being arranged in correspondence with the respective printing elements and configured to control energization to the respective printing elements, and a plurality of constant current sources configured to supply constant currents via said switching elements arranged in correspondence with the respective printing elements;

a reference voltage circuit configured to generate a reference voltage; and

a current generation circuit configured to generate a plurality of reference currents on the basis of the reference voltage generated by said reference voltage circuit,

wherein each of the constant current sources being arranged in each of said plurality of element driving blocks supplies a constant current corresponding to any one of the plurality of reference currents via said switching element being arranged in correspondence with the each printing element of said element driving block.

21. The substrate according to claim 20, wherein the respective constant current sources form current mirror circuits with current output circuit portions of said current generation circuit.

22. The substrate according to claim 20, wherein said plurality of printing elements and said plurality of switching elements are divided into a plurality of groups, and the respective constant current sources are connected to the respective groups.

23. The substrate according to claim 20, wherein said constant current source is formed using MOS

transistors, each of which operates in a saturation region wherein a drain current hardly changes with respect to a drain voltage.

24. The substrate according to claim 20, wherein the printing elements, the switching element and the constant current source are connected in series between a high voltage wiring and a low voltage wiring in an order of the printing elements, the switching element and the constant current source.

25. A head cartridge comprising:

a printhead defined in claim 1; and

an ink tank configured to accommodate ink to be supplied to said printhead.

26. A printing apparatus comprising:

a printhead defined in claim 1; and

driving means for driving said printhead in accordance with a printing signal.